

REMARKS

The present Amendment amends claims 1-9 and 11-17 and leaves claim 10 unchanged. Therefore, the present application has pending claims 1-17.

Claim 17 stands rejected under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as their invention. Amendments were made to claim 17 to bring it into conformity with the requirements of 35 USC §112, second paragraph. Therefore, Applicants submit that this rejection is overcome and should be withdrawn.

Applicants acknowledge the Examiner's indication in the paragraph 6 of the Office Action that claims 3, 4, 7, 8, 12, 13 and 16 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Amendments were made to claims 3, 4, 7, 8, 12, 13 and 16 to place them in independent form including all the limitations of the base claim and any intervening claims. Therefore, claims 3, 4, 7, 8, 12, 13 and 16 are allowable as indicated by the Examiner.

Applicants also acknowledge the Examiner's indication in paragraph 7 of the Office Action that claim 7 would be allowable if rewritten to overcome the rejection under 35 USC §112, second paragraph and to include all the limitations of the base claim and any intervening claims. Amendments were made to claim 17 to overcome the 35 USC §112, second paragraph rejection and to include all the limitations of the base claim and any intervening claims. Therefore, claim 17 is allowable as indicated by the Examiner.

Claims 1, 2, 5, 6, 9-11, 14 and 15 stand rejected under 35 USC §102(e) as being anticipated by Kodama (U.S. Patent Application Publication No. 2004/0254964). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1, 2, 5, 6, 9-11, 14 and 15 are not taught or suggested by Kodama whether taken individually or in combination with any of the other references of record. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to each of independent claims 1, 5, 9 and 14 so as to more clearly recite that the present invention is directed to a storage system, a back-up method implemented in a storage system and a back-up system. According to the present invention the storage system includes a first storage unit for storing data from a first server, a second storage unit for storing data stored in the first storage unit and a storage controller being coupled to the first storage unit, the second storage unit, the first server and a second server and being used to control the first storage unit and the second storage unit.

According to the present invention when an instruction for splitting between the first and second storage units is received from the first server, the storage controller reports an end of the splitting to the first server before completing of copying from the first storage unit to the second storage unit, receives an instruction for back-up from the second server during the copying from the first storage unit to the second storage unit and then transfers data to a back-up device from the second storage unit after copy of data from the first

storage unit to the second storage unit ends based on controlling by the storage controller.

Further, according to the present invention if an instruction for back-up is issued from the second server after the splitting, then the storage controller checks whether differential data in the first storage unit remains to be backed up, and if differential data in the first storage unit remains to be backed up, then the storage control reflects the differential data in the second storage unit and transfers backed up data from the second storage unit to the back-up device.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by Kodama whether taken individually or in combination with any of the other references of record.

Kodama teaches a storage device which can selectively replicate one or more data portions from a real data space to a virtual data space and for selective roll-back of data portions from the virtual data space to the real data space. Kodama teaches, for example, a split processing performed in response to a split request in Fig. 12 thereof. Kodama teaches that an array manager is provided which changes the pair status to a split pair upon an indication of successful completion of the split request. However, this teaching of Kodama does not correspond to the features of the present invention as now more clearly recited in the claims.

Particularly, the above described teachings of Kodama do not anticipate or render obvious the features of the present invention illustrated, for example, in Figs. 3 and 4 of the present application. As per Figs. 3 and 4 of the present application according to a step 5 the back-up server 102 sends

an instruction command requesting back-up and according to a step 6 when the instruction command for back-up is issued the source volume 601 is monitored to determine whether any differential data exists. If such differential data exists, then the differential data is reflected unto the target volume 602. As per the present invention, the storage controller 301 in response waits until all differential data has been reflected in the target volume 602, and then according to step 7 the backed up data is transferred to the back-up device (tape device) 303. These features now more clearly recited in the claims are not taught or suggested by Kodama whether taken individually or in combination with any of the other references of record.

Thus, Kodama fails to teach or suggest that when an instruction for splitting between the first and second storage units is received from the first server, the storage controller reports an end of the splitting to the first server before completing of copying from the first storage unit to the second storage unit, receives an instruction for back-up from the second server during the copying from the first storage unit to the second storage unit and then transfers data to a back-up device from the second storage unit after copy of data from the first storage unit to the second storage unit ends based on controlling by the storage controller as recited in the claims.

Further, Kodama fails to teach or suggest that if an instruction for back-up is issued from the second server after the splitting, then the storage controller checks whether differential data in the first storage unit remains to backed up and if differential data in the first storage unit remains to be backed up, then the storage controller reflects the differential data in the second

storage unit and transfers backed up data from the second storage unit to the back device as recited in the claims.

Therefore, Kodama fails to teach or suggest the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 USC §102(e) rejection of claims 1, 2, 5, 6, 9-11, 14 and 15 as being anticipated is respectfully requested.


The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1, 2, 5, 6, 9-11, 14 and 15.

In view of the foregoing amendments and remarks, applicants submit that claims 1-17 are in condition for allowance. Accordingly, early allowance of claims 1-17 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (TMI-5036).

Respectfully submitted,

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